S·A·E Journal

Published Monthly by The Society of Automotive Engineers, Inc.

A. T. Colwell, President — David Beecroft, Treasurer

John A. C. Warner, Secretary and General Manager

Norman G. Shidle, Executive Editor

CONTENTS AUGUST 1941

SAE Members Are Key Men in Defense Motor Transport Program - - - 15

Defense Impact on Industry - - - - - - - - - - - - - - - - - 15-19

About SAE Members - 20

SAE Coming Events - 23

TRANSACTIONS SECTION

Brakes – Their Analysis and Balancing - - - - - - S. Johnson, Jr. 301

Lubrication of Severe-Duty Engines (Diesels) – J. G. McNab, W. C. Winning, B. G. Baldwin, and F. L. Miller 309

Compounding – Facts and Fallacies - - - - - - - Ford L. Prescott 326

The Present Status of Combustion Research - - - - Ernest F. Fiock 332

Effect of Rim Width on Car and Tire Performance - - - R. D. Evans 340

Wide-Base Tire and Rim Construction - - - - - Sidney M. Cadwell 343

General Approach to the Flutter Problem - - - - - - - S. J. Loring 345

News of the Society - 25

New Members Qualified - - - - - - - - - - - - - - - - - - - 27

Applications Received - - - - - - - - - - - - - - - - - - - 28

About Authors

■ *In 1940,* B. G. BALDWIN *was made head of the lubricants section of the Research Division of the Esso Laboratories, in charge of the research on and development of superior quality automotive, diesel, and aviation crankcase lubricants. That was just four years after he joined the Standard Oil Development Co. as research chemist. Mr. Baldwin was graduated from Western Reserve University in 1936 with a Ph.D. in chemistry.*

■ DR. SIDNEY M. CADWELL *(M '31), director of tire development, United States Rubber Co., has kept pretty busy in the rubber field. His contributions include accelerators of vulcanization, new processes, the first rubber anti-oxidant to be marketed as such, and, more recently, an improved tire tread compound known as "Tempered Rubber". His publications consist largely of patents, and he was co-author of a chapter on Accelerators in the Monograph on Rubber entitled "Chemistry and Technology of Rubber". In 1914, Dr. Cadwell was awarded his B.S. degree at the University of Chicago, and remained there for his graduate study. After receiving his Ph.D. in 1917, he joined the Chemical Service Section, U.S.A., as second-lieutenant. Later he became captain in the Service. Immediately following the war, Dr. Cadwell went to work for the United States Rubber Co. as research chemist. In 1930, he was made assistant director of the development department, and later in the year went to Detroit as director of tire development, a position he still holds. Dr. Cadwell was vice chairman of the Detroit Section of the SAE in 1934, in charge of student activity.*

■ *After graduating from the Ohio University, Athens, Ohio,* R. D. EVANS *(M '38), spent several years as graduate student and instructor in the Division of Physics of Harvard University. For three years thereafter he was professor of physics at Bowdoin College.* *(Concluded on page 24)*

C. B. Whittelsey, Jr., *Business Manager,*
29 West 39th St., New York, N. Y.

E. L. Carroll, *Eastern Advertising Manager,*
29 West 39th St., New York, N. Y.

A. J. Underwood, *Western Advertising Manager,*
2-136 General Motors Bldg., Detroit, Mich.

THE CALL TO SERVICE IS SOUNDING FOR EVERY CAR AND TRUCK DEALER!

America needs ALL her truck transport at full efficiency!

DEFENSE - curtailed production of cars and trucks carries positive promise of two important results, which vitally affect the business of the entire dealer organization of America.

1. Maintenance-service work becomes paramount in the dealer's business

A car or truck dealer, from now on, has to sell service in steady quantity to stay in business, to keep his organization intact, and to maintain the valuable good-will of car and truck owners.

The nation-wide Bendix distributor-dealer organization and the Bendix factory stand ready to render every co-operation and assistance to every automotive manufacturer to the end that his field organization may prosper. Skilled Bendix specialists, backed by adequate parts stocks and proper equipment, mean a great deal to car and truck dealers in rendering service.

2. Maintenance-service work becomes vitally important in America's defense

Thirty-odd million cars and trucks, rolling a billion miles a day, have got to be kept rolling . . . reliably, economically, safely, for the good of the nation!

Metals and other merchandise of thousands of kinds must be kept moving by truck fleets. Men by millions must get to work and get home—often to and from prairie plants otherwise inaccessible. Junk "jaloppies" are menaces to safety—extravagant with America's gas and oil—unreliable and unadmired. Owners now earning better incomes, are going to demand overhaul and upkeep service.

Bendix intends to help with this job to the utmost abilities of Bendix plant facilities, and Bendix nation-wide service and parts organizations. Backing up America's car and truck dealers, ready at their call to supply Bendix products, Bendix specialized service and Bendix educational and advisory aid, we believe, is our obvious duty to the industry we serve.

Bendix

BENDIX PRODUCTS DIVISION
OF BENDIX AVIATION CORPORATION
SOUTH BEND, INDIANA

IS PLEDGED TO HELP YOU PREPARE!

SAE Members Are Key Men In Defense Motor Transport Program

Among the men appointed to serve on the Central Motor Transportation Committee of the Office for Emergency Management *(see page 191* are the following SAE members:

1. H. H. Kelly, Interstate Commerce Commission, Executive Secretary
2. T. L. Preble, T & M Vice President, SAE, New York
3. Frederick C. Horner, OEM Consultant, Private Trucking
4. Leo Huff, Chicago, Regional Committee No. 8
5. Robert H. Clark, New York, Regional Committee No. 2
6. Randolph Whitfield, Atlanta, Regional Committee No. 6
7. G. D. Gilbert, Chicago, Regional Committee No. 8
8. J. A. Herlihy, Boston, Regional Committee No. 1
9. Gavin W. Laurie, Philadelphia, Regional Committee No. 3
10. Fred L. Faulkner, Chicago, Regional Committee No. 8
11. S. G. Page, Pittsburgh, Regional Committee No. 4

Detroit – No. 1 U.S. Arsenal

WITH OPM Knudsen's promise to triple automotive manufacturers' contracts for national defense equipment from the present $2 billion to $6 billion, Detroit will become the undisputed No. 1 arsenal of the nation. As an indication of this impact, the industry built about $3½ billion (wholesale value) of cars and trucks in 1929 (U. S. and Canada) and has been building at about that rate this year. With this huge prospective increase in sight, the 20% cut projected to begin in August is looking more like a 50 to 75% cut by some of the OPM priority oracles. Lack of raw materials and a dearth of man power will have played an important role in this cut.

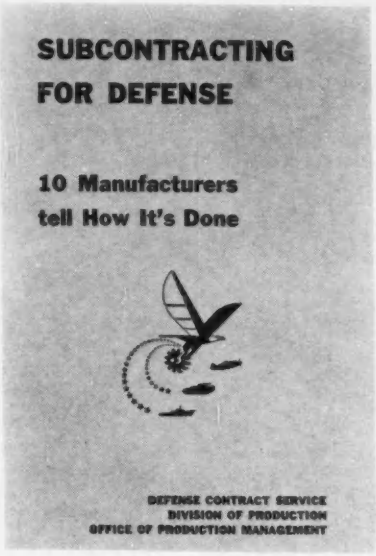
Ardent research for substitutes has resulted in several factories hitting upon the same solution – thus creating new shortages. To relieve the pressure on zinc, for example, several large automobile makers decided to substitute copper for the 32%-zinc content of brass. About this time copper became more critical than zinc. Comes now an OPM estimate that civilian needs of copper as compared with the amount in sight for non-military use is about 5 to 2. Other ratios announced by OPM's Conservation & Substitution Section:

Material	Normal Civilian Requirement		Apparent Civilian Supply
Aluminum	25	to	1
Alloy Steels	2	to	1
Nickel	2	to	1
Tungsten	2	to	1
Chromite	3	to	2
Manganese	3	to	2
Mercury	3	to	2
Plastics	3	to	2
Tin	3	to	2
Zinc	3	to	2
Rubber	10	to	7
Nitrates	8	to	7
Power	10	to	9
Steel	10	to	9
Lead	1	to	1

Any analysis of the critical materials is only a run-around until cogent estimates of the defense requirements can be had. There has been a lot of indecision as to Army and Navy orders, many manufacturers having to proceed upon "letters of intent" pending final contracts, to get work started. There will be more delays in orders because the military is keenly observing the effectiveness of new weapons in action in Europe.

Despite the point of view of industry, however, important OEM and OPM executives are emergency-minded, and they will have a hand in making the paradox of 1942 – larger family incomes, yet fewer opportunities to spend money. Enough people have seen this legend written on the wall to raise automobile sales 40%, electric ranges 50%, refrigerators 35%, homes 34%, washing machines 40%, coal stokers 80%, radios 20%, and vacuum cleaners 25%, as compared with the first six months of last year.

The nation is importing rubber at the rate of a million tons a year, a rate well ahead of normal plus estimated defense use. But Consultant W. L. Finger is an ardent evangelist for conservation: . . . "suppose shipping should be blocked between here and the Dutch East Indies?" he asked.



New booklet telling how ten contractors "subbed" profitably is free from Defense Contract Service, OPM, Washington, and local national defense offices – such as Federal Reserve Branch Banks

Zinc and Conservation

"CONSERVATION, like charity, begins at home. It will hit us sooner and harder than taxes." This was the answer made by Robert E. McConnell, chief of the Conservation and Substitution Section, OPM, to SAE inquiries about the possible lessening of pressure upon a number of critical materials heretofore under stringent priorities.

A new zinc priority order, on casual reading, seemed to indicate a further limitation of this metal for civilian uses, but it was explained that the order simply puts into legal verbiage what zinc producers and the OPM have been doing by agreement since April. Zinc producers are distributing to customers with defense and non-defense orders 78% of the metal, 22% going into the zinc "pool" to relieve urgent "hot-spots." So much of the "pool" as is needed for defense requirements not already covered is allocated by OPM, the balance of this "pool" being allocated to non-defense "hot-spots" under the direction of OPACS.

U. S. production of zinc has expanded remarkably by adding new plants, enlarging present plants, and by rehabilitating unused or dormant plants. The figures on production of slab zinc in the U. S.:

1935-1939	540,000 tons (average annual)
1938	478,000 tons
1939	557,700 tons
1940	724,000 tons
1941	900,000 tons (estimated)
1942	950,000 tons (estimated – to which can be added from 25,000 to 35,000 tons from Mexico).

In the 1930-1939 period, America was the largest producer of zinc with 29.1% of the world's total. In 1939 America again led the world with 545,000 tons; the British Empire (Great Britain, Canada, Australia, and Rhodesia) was second with a total of 326,000 tons; Germany 234,000 tons; Belgium 205,000 tons; and Poland, 130,000 tons. The last three, now "pooled" by Hitler, would have totaled 569,000 tons, would have given the Nazi war machine an edge over the U. S. by 24,000 tons as of the 1939 world rate of production if it had been possible for the Belgian smelters to secure the concentrates to which they formerly had access. Zinc men agree, however, that under Hitler, production of the metal in Germany itself probably has mounted.

The U. S. 1942 zinc production estimates are predicated upon the continued flow of imported concentrates from Mexico, Canada, Newfoundland, Peru, Argentina and Bolivia, and to a less extent imports from Spain and Australia.

Ordnance Needs Zinc

The largest demand for zinc will be in the form of brass for cartridges, shells, fuses, and other ordnance purposes. Other uses are for alloys of zinc with small amounts of aluminum, copper, and magnesium; and rust-proof galvanizing for many army products and for equipment for navy and merchant marine ships. A wide variety of die castings are needed in aerial cameras and other military equipment. A large quantity of sheet zinc is also required by the Army and Navy.

Automotive use of zinc in 1939 was about 12% of the U. S. total consumption. Already many substitute metals have been decided upon by the automotive industry.

Priorities' Policeman

TOSSED into a whirlpool of conflicting laws, regulations, and orders, L. J. Martin has been named by E. R. Stettinius, Jr., Director of Priorities, to be the Number One Man on Compliance, in charge of a new OPM alphabetical creation, the CS of OPM. He was formerly assistant to the president of Thos. A. Edison, Inc.

Punitive action will be taken where attempts to obtain voluntary compliance fails. Action:

1. Publicity about violations or evasions;
2. Restricting supplies of critical materials until compliance is assured; and if necessary,
3. Court action.

Sources of compliance complaints:

- The various offices of the OPM;
- Army and Navy officials;
- Industry (presumably competitors in some cases);
- The general public.

A staff of field representatives will be organized. These men will be charged with "selling the idea" of compliance, as do the more benevolent of cops. The Compliance Section will see that industry is well informed on compliance matters, and to promote a willingness to comply, the order states.

Much of this work will be carried out by the Priorities Field Service, and cooperation with the Army and Navy Munitions Priorities Committee, field inspectors of the military services, and other government agencies.

Tool Speed-Up

"DEAR Bill:

"I am particularly anxious that the arsenals and those defense industries holding high priority contracts with the Army and Navy secure all the necessary machines or machine tools . . ."

So wrote the President to OPM Director General Knudsen on May 28.

A new machine-tool priority order, P-11, now takes place of P-2, issued March 26, and expired June 30. It extends blanket preference ratings to about 450 machine-tool builders. Upon agreement in writing, the tool manufacturer can speed deliveries of parts and materials going into their machine-tool products.

Subcontractors may automatically extend their ratings to their suppliers.

Paper work is reduced both for the machine-tool builder and his subcontractors, since only a photographic copy of the executed order is required. Equipment and materials covered by the new order are:

Motors and other electrical equipment;
Alloy steels in bars, forgings, castings, and tubes;
Iron, steel, and aluminum castings;
Machine parts and equipment;
Cutting tools, including cemented carbides;
Abrasives;
Measuring instruments and gages;
Brass, copper, and steel tubing and fittings;
Oil resisting hose;
Steel rail and other steel scrap;
Silvery and regular pig iron;
Coke;
Ferro-silicon and ferro-manganese;
Vanadium;
Nickel, molybdenum, and chromium.

Recently Robert L. Mehornay, head of the OPM Contracts Service Division, told the Senate Defense Committee that considerable progress had been made getting smaller machine-tool manufacturers to sublet parts of their government contracts.

No Refusals to "Sub"

"No manufacturer with a defense contract has flatly refused to 'sub' it," he testified. Many preferred not to, believing that they could meet their schedules.

He also reported that the Army and Navy had changed their opinions in respect to permitting subcontracting, and the Army had directed contractors to subcontract wherever possible. A number of contracts have been adjusted to provide bonuses for speedier deliveries through subcontracting. The Navy has adopted a policy of buying commercial tools and equipment at their shore stations instead of resorting to the tedious process of obtaining commitments to their specifications.

✪

To Contact For Contracts

Manufacturers who find it necessary to go to Washington to secure government contracts can make appointments, receive specific and detailed information, and obtain advice at the Service and Information office, Department of Commerce, Room 1060.

Government officials urge manufacturers to get as much information as possible from Defense Contract Service offices in local Federal Reserve Branch Banks and local offices of Army and Navy departments before making trips to Washington.

Official Answers to Questions

Officials of the OPM gave these answers to the SAE Journal to questions about the national defense program.

Question:

How is the government's rubber pool coming along?

Answer:

All right. Non-essential cargoes from the Far East, such as sugar, have been taken off giving us more cargo space for rubber. Sugar tonnage from the Philippines has been running about 100,000 a month, about 1,250,000 a year. Tapioca and Ilmenite, an ingredient for paint, are close seconds. We have asked the users of 95% of the tapioca this country imports to find substitutes. We eat about 5% and the rest is used for adhesives on stamps, envelopes, packages, shoes, and other products. They have already agreed to reduce imports from 18,000 tons a month to about 6,000, substituting corn and potato starches. Most of the 6,000 tons

will be used for stamps and envelopes. This glue tastes better than the substitutes.

★

Question:

How far has the automobile industry gone in voluntarily decreasing its use of critical materials?

Answer:

About 50%. That is on a per million unit basis. If automobile output is halved, for example, the saving on these materials will be another 50%, bringing the overall percentage to 25% of the 1940 figure. Current plans indicate that there will be practically no aluminum used, about half the zinc, and less than half the copper.

★

Question:

Would raising the price of zinc, to say from 7¼ cents to 9 cents, tend to increase the production?

Answer:

This might increase production, and might deter some of the civilian use. The question is in Mr. Leon Henderson's orbit, however.

★

Question:

Are the various material pools or stock piles being drawn upon currently for defense needs?

Answer:

No. We are doing our best to increase these stocks. In the case of rubber, we are "rotating" the stock – that is, moving out to industrial use older rubber, and holding the newer imports. This is because rubber is perishable. Army and Navy requirements are about 75,000 tons a year at present. (The psychological effect of new car

buyers not being supplied with a spare tire appeals to the nation's conservation experts).

Question:

Where do you expect to find the next deep cut into consumer goods?

Answer:

Silk stockings. When the parachute program comes to us, there will be a question whether women will be able to get all the silk stockings they want. The U. S. nylon capacity is about one-third of the demand.

★

Question:

Is there any power shortage ahead?

Answer:

Yes. Industries in the Southeastern states have already been reduced about one-third in their electrical power allotments. The other sections of the country are fairly comfortable, and will probably be so until the aluminum program gets into operation. Additional power projects are underway to take care of some of the aluminum requirements. Adjustments of some sort will have to be made in many cities, however, when industry gets on a three-shift-per-day defense schedule.

★

Question:

How did OPM arrive at the ratio of 5 to 2, in favor of defense needs, in the case of copper?

Answer:

Our U. S. productive capacity is about 1,050,000 tons of copper a year. We are

importing about 500,000 tons from South America, making a total of 1,550,000 tons. The direct and indirect requirements of the Army and Navy total 1,250,000 tons. That leaves about 300,000 tons for civilian use, against a normal demand of from 800,000 to 900,000 tons a year (1937 to 1938 average) or a demand of about five to two.

Missing-Link Of Inventions

MOST of the inventive ideas for national defense are being cleared today through the National Inventors Council, Department of Commerce, Washington. Following an analysis by one of its 12 committees of experts, those appearing to have sufficient defense merit are referred to the Army, Navy or some other military organization which might make use of the idea.

The careful, and often costly, development work between an idea and actual production is now being done by:

- Army arsenals or other Army organizations equipped with machinery and personnel to undertake this task, such as Wright Field and the QMC Depot, Holabird,
- Navy yards and Langley Field,
- Contract development work done at military expense on a limited scale, and
- Manufacturers interested in the possibilities of the idea.

It is generally agreed that this stage of invention for national defense is the "forgotten missing-link," inasmuch as the military can develop only a small percentage of the best ideas submitted, and manufacturers have been kept busy on their continuing development programs.

Disagreements

Diametrically opposed, however, were opinions offered to the SAE Journal as to how this important development work should be stimulated or financed. Most of the men who have been thinking about this problem agree that inventors are usually un-moneyed men, are often unable to contribute anything except the rough idea.

Loud and positive "no" was the answer of several highly-placed men to the question as to whether the government should shoulder the task, perhaps through a new agency formed under the aegis of OEM. Others were just as vehemently on the other side of the question, holding that it was the duty of the government tp help inventors of apparently-good ideas to develop their brain-children in the interest of national defense, providing authoritative military and government engineers approved such expenditures.

Some of the experts wrestling with this problem indicated that many good but Army-rejected ideas are locked in files because there is no agency to make of them useful products. They point out that the present government facilities are wholly inadequate to handle the development work required.

Other authorities contended that the government cannot properly differentiate between the nation's inventors; can properly protect ideas which are patentable by issuing patents, but cannot further develop the monopoly thus created for one without offering a like service to all. Careful consideration is undertaken on each of the many congressional proposals to change the patent laws by the Patent office – and admissions of several legislators to this reporter that their respective bills were based solely upon the letter of some irate patentee indicates that this situation bears watching.

Sometimes a Navy or Army officer hits upon a "natural." A recent instance was a device conceived of and designed by Lt.-Col. R. B. Lord to get motorized equipment across rivers and streams where no bridges could be built. Familiar with the problems of troop movements in combat, and with a sound background of engineering, he had his idea ready for test within a few months and the equipment is now being built for the Army by a manufacturer of hoists and rigging devices. A large number of Naval developments have stemmed from the minds of officers of that service.

OSRD – A New Agency

On June 28 the President signed an executive order establishing under OEM an Office of Scientific Research and Development. This is to assure adequate provision for research on scientific and medical problems relating to national defense. Whether this new agency will consider the "missing-link" problem within its scope could not be immediately determined.

Recently the Department of Commerce estimated that in 1940 there were 2200 industrial research laboratories in the U. S., employing more than 70,000 technicians at an estimated annual cost of $300,000,000. It is probable that some of this personnel, not now engaged in important defense work, will be mobilized by the new OSRD.

I Man-Hour Per Aero HP

It is currently taking about 1 man-hour of labor to produce 1 hp of aircraft engine. The rapidly-changing manufacturing programs of the aero engine industry will probably reduce this figure, however, and some factories are difficult to compare with others because of differences in tooling setups.

Automobile factories undertaking to build 1000 of the 2000-hp engines a month can count on about 2,000,000 man-hours a month – unless they can initiate some new basic production contributions.

Considering Silver "Draft"

Some OPM officials are considering drafting silver and putting it to work in the national defense program. Chief uses: Industrial brazing and soldering (to relieve pressure on tin, zinc, and bronzes), and replacing copper tubes for aircraft heat-transfer units. The U. S. has about 42,000 tons of the metal (non-monetized) in vaults, which, if released at purchase prices or less, in the public interest, would give other "criticals" a breathing spell.

Defense-O-Grams

COMMITTEE OF THE AUTOMOTIVE INDUSTRY HAS BEEN APPOINTED TO ADVISE ON DEFENSE LABOR PROBLEMS, CONSULTING WITH VARIOUS OPM COMMODITY GROUPS.

★

QUICK, SINGLE-OPERATION DEVICE TO UNBUCKLE PARACHUTE HARNESS WOULD INTEREST NATIONAL INVENTOR'S COUNCIL, WASHINGTON. PRESENT DEVICE IS CUMBERSOME, TOO SLOW TO UNHOOK, HENCE DANGEROUS.

★

FEDERAL AGENCY DECENTRALIZATION IS UNDERWAY, FIELD STAFFS OF OPM AND OTHER DEFENSE UNITS GOING TO INDUSTRY. REASONS: BETTER SERVICE TO MANUFACTURERS, LESSENING THE POPULATION AND TRAFFIC CONGESTION OF WASHINGTON.

★

TERMITE TRAPS AND NEW YORK'S SABBATH LAWS THREATENED TO UNDERMINE NATIONAL DEFENSE; DELAY DELIVERY OF "MUST" TRAPS FOR CARIBBEAN ISLAND BASES, BUT MAGISTRATE SUSPENDED SENTENCES AND URGED ALL MANUFACTURERS TO GET PERMITS FOR SUNDAY WORKERS.

★

BERMUDA, ONE OF WORLD'S FEW EXCLUSIVE HORSEY AND ANTI-CAR OUTPOSTS, CAME CLOSE-CROPPER WHEN PROPOSAL TO PERMIT U. S. ARMY CARS AND TRUCKS NEARLY PASSED ITS FIRST READING. IF FINALLY ADOPTED, IT WILL BE "FOR THE DURATION," ONLY, SAID SIR STANLEY SPURLING, AUTHOR.

★

FIRESTONE TIRE & RUBBER CO. HAS FORMED AVIATION SUBSIDIARY, TAKING OVER AERO TIRES, SELF-SEALING FUEL TANKS, BUOYS, WHEELS AND BRAKES, ETC.

★

M.I.T. WILL SPEND MORE THAN $2,000,000 THIS YEAR ON SPECIAL NATIONAL DEFENSE RESEARCH WORK.

★

WHOLE FACTORY OF AERO PRODUCTS DIVISION (G.M.) AT VANDALIA NEAR DAYTON IS AIR-CONDITIONED EXCEPT HEAT-TREATING DEPARTMENT. CALCULATED TO MEAN MUCH WHEN LABOR MARKET STIFFENS IN THAT AREA, MANAGEMENT THINKS.

To Analyze Needs of Fleets

TO analyze and then to interpret to the government the needs for equipment and parts of the entire motor transportation industry, and to formulate and execute a master plan for the more economical use of motor vehicles and the highways in national defense, the Central Motor Transportation Committee and 16 Regional Committees have been appointed by the Office of Emergency Management.

Already the program is taking definite form along these lines:

- Nation-wide study of the intensity of use of motor vehicles, including pooling of equipment by competing operators if necessary.
- Preparation of a "template" or pattern to guide recommendations to OPM, through OEM, as to what fleets should be given priority in buying new vehicles and parts, and how many.
- Study of unification of state highway regulations with view of eliminating the many existing state "barriers" and conflicting size, weight, and other limitations.
- Dissemination of studies and analyses to all operators.

Truck Use Census Started

An important factor in some of the above will be the results of the nation's first coast-to-coast census of motor trucks and buses. This million-dollar undertaking of the Federal Works Agency, projected at the behest of the War Department, is under the supervision of the Public Roads Administration with the cooperation of WPA. Printed questionnaire forms (see right) have been sent to all state motor-vehicle registration agencies to be sent in turn to every registered motor-vehicle owner in the country.

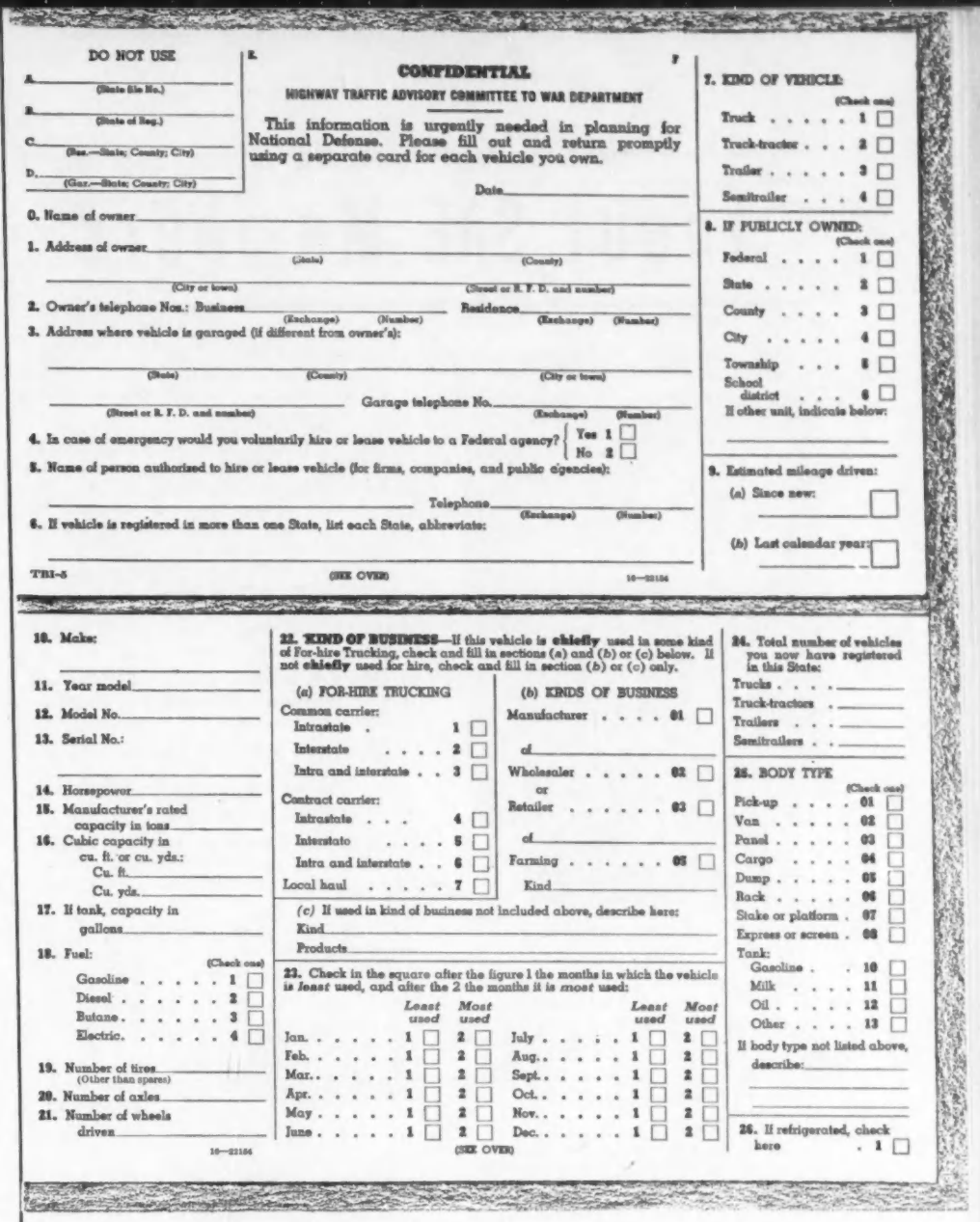
Intensity of use of motor vehicles is considered by several members of the Central Committee to be the keystone of much of the program. A study of this is now being made under SAE T & M Activity auspices by a subcommittee of which F. K. Glynn is chairman.

Securing equipment has already become a serious problem with many operators of trucks and buses due to increased traffic demand on the one hand, and difficulty in getting critical materials for vehicles and parts on the other. The OPM has indicated its willingness to be guided by the Central Committee in giving equipment and parts priorities to operators.

Priorities for Repair Parts

The Office of Price Administration and Civilian Supply has included the motor-vehicle industry among 26 industries and services which will be given priorities on parts necessary to assure maintenance of their existing facilities. These "shall be allocated prior to all other civilian requirements to the extent consistent with the defense program as determined by the OPM," a recent order stated.

Ralph Budd, Transportation Commissioner of OEM, has appointed Commissioner John L. Rogers, Interstate Commerce Commission, and former chief of the ICC Bureau of Motor Vehicles, chairman of the Central Motor Transportation Committee. Named to serve on the committee are:



DO NOT USE
A. _____ (State file No.)
B. _____ (State of Reg.)
C. _____ (Reg.—State; County; City)
D. _____ (Gar.—State; County; City)

E.

CONFIDENTIAL
HIGHWAY TRAFFIC ADVISORY COMMITTEE TO WAR DEPARTMENT

This information is urgently needed in planning for National Defense. Please fill out and return promptly using a separate card for each vehicle you own.

Date _____

F

7. KIND OF VEHICLE: (Check one)
Truck . . . . . 1 ☐
Truck-tractor . . . 2 ☐
Trailer . . . . . 3 ☐
Semitrailer . . . 4 ☐

8. IF PUBLICLY OWNED: (Check one)
Federal . . . . 1 ☐
State . . . . . 2 ☐
County . . . . 3 ☐
City . . . . . 4 ☐
Township . . . 5 ☐
School district . . . 6 ☐
If other unit, indicate below:
_____

9. Estimated mileage driven:
(a) Since new: ☐
(b) Last calendar year: ☐

10. Name of owner _____
11. Address of owner _____ (State) (County) (City or town) (Street or R. F. D. and number)
12. Owner's telephone Nos.: Business _____ (Exchange) (Number) Residence _____ (Exchange) (Number)
13. Address where vehicle is garaged (if different from owner's): _____ (State) (County) (City or town) _____ (Street or R. F. D. and number) Garage telephone No. _____ (Exchange) (Number)
14. In case of emergency would you voluntarily hire or lease vehicle to a Federal agency? Yes 1 ☐ No 2 ☐
15. Name of person authorized to hire or lease vehicle (for firms, companies, and public agencies): _____ Telephone _____ (Exchange) (Number)
16. If vehicle is registered in more than one State, list each State, abbreviate: _____

TRI-5 (SEE OVER) 10—22156

18. Make: _____
19. Year model _____
20. Model No. _____
21. Serial No.: _____
22. Horsepower _____
23. Manufacturer's rated capacity in tons _____
24. Cubic capacity in cu. ft. or cu. yds.: Cu. ft. _____ Cu. yds. _____
25. If tank, capacity in gallons _____
26. Fuel: (Check one)
Gasoline . . . . . 1 ☐
Diesel . . . . . 2 ☐
Butane . . . . . 3 ☐
Electric . . . . . 4 ☐
27. Number of tires (Other than spares) _____
28. Number of axles _____
29. Number of wheels driven _____

10—22156

32. KIND OF BUSINESS—If this vehicle is **chiefly** used in some kind of For-hire Trucking, check and fill in sections (a) and (b) or (c) below. If not **chiefly** used for hire, check and fill in section (b) or (c) only.

(a) FOR-HIRE TRUCKING
Common carrier:
Intrastate . 1 ☐
Interstate . . . . 2 ☐
Intra and interstate . . 3 ☐
Contract carrier:
Intrastate . . . 4 ☐
Interstate . . . . 5 ☐
Intra and interstate . . 6 ☐
Local haul . . . . . 7 ☐

(b) KINDS OF BUSINESS
Manufacturer . . . . 01 ☐
of _____
Wholesaler . . . . . 02 ☐
or
Retailer . . . . . 03 ☐
of _____
Farming . . . . . 05 ☐
Kind _____

(c) If used in kind of business not included above, describe here:
Kind _____
Products _____

33. Check in the square after the figure 1 the months in which the vehicle is *least* used, and after the 2 the months it is *most* used:

	Least used	Most used		Least used	Most used
Jan.	1 ☐	2 ☐	July	1 ☐	2 ☐
Feb.	1 ☐	2 ☐	Aug.	1 ☐	2 ☐
Mar.	1 ☐	2 ☐	Sept.	1 ☐	2 ☐
Apr.	1 ☐	2 ☐	Oct.	1 ☐	2 ☐
May	1 ☐	2 ☐	Nov.	1 ☐	2 ☐
June	1 ☐	2 ☐	Dec.	1 ☐	2 ☐

(SEE OVER)

34. Total number of vehicles you now have registered in this State:
Trucks . . . . _____
Truck-tractors . _____
Trailers . . . _____
Semitrailers . . _____

35. BODY TYPE (Check one)
Pick-up . . . . 01 ☐
Van . . . . . 02 ☐
Panel . . . . . 03 ☐
Cargo . . . . 04 ☐
Dump . . . . . 05 ☐
Rack . . . . . 06 ☐
Stake or platform . 07 ☐
Express or screen . 08 ☐
Tank:
Gasoline . . 10 ☐
Milk . . . . 11 ☐
Oil . . . . . 12 ☐
Other . . . . 13 ☐
If body type not listed above, describe: _____

36. If refrigerated, check here . 1 ☐

Obverse side (top) and reverse of the questionnaire card being sent by the Public Roads Administration to all truck owners in nation-wide census. A blue card (one side only) will be used for buses. This is the first census ever made of existing vehicles in U. S., is considered important in national defense planning, and will be available to Central Motor Transportation Committee (left)

Thomas H. McDonald, Commissioner, Public Roads Administration.

Ted V. Rodgers, President, American Trucking Associations, Inc., and consultant on for-hire trucks, Washington.

Frederick C. Horner, Assistant to the Chairman, General Motors Corp., and consultant on private trucking, New York.

Fred Brenkman, President, National Council of Private Motor Truck Owners, Inc., Washington.

A. J. Boardman, East Massachusetts Railway, Boston.

Charles P. Clark, Chairman Contract Carrier Service, ATA., St. Louis.

A. M. Hill, President, National Association of Motor Bus Operators, Charleston, W. Va.

W. H. Ott, Kraft Cheese Co., Chicago, Ill.

T. L. Preble, Superintendent of Automotive Transportation, Tide Water Associated Oil Co., and Vice President, SAE, New York.

G. Lloyd Wilson, Consultant, OPACS, Washington.

Eugene W. Ridings, Office of Civilian Defense, Washington.

D. L. Sutherland, Chairman, Common Carrier Division, ATA, New York.

J. A. Wells, Office of Agriculture Defense Relations, Washington.

E. F. Zelle, Jefferson Transportation Co., Minneapolis.

H. H. Kelly, of the Interstate Commerce Commission, is executive secretary of the Central Motor Transport Committee.

Each of the 16 regional committees will have representatives of common carriers, contract carriers, farms, manufacturing, distribution, public utility, and highway traffic interests.

About SAE Members

COL. HERBERT W. ALDEN, director of engineering, Timken-Detroit Axle Co., Detroit, will receive an Army Ordnance Association medal this fall for his work in designing fighting vehicles. The medal is given by the Association for meritorious service to armament engineering.

NICHOLAS FODOR has resigned as vice president in charge of engineering, Aircraft & Diesel Equipment Corp., Chicago, to become president and chief engineer, Diesel Engineering & Mfg. Corp., Chicago.

President and Chief Engineer

Nicholas Fodor

E. E. WILSON, J. CARLTON WARD, JR. and **ROBERT E. GROSS** have been selected to represent the SAE on the Daniel Guggenheim Medal Board of Award.

D. E. GAMBLE was elected chairman of the board of directors, Pump Engineering Service Corp., Division of Borg-Warner Corp., Cleveland, Ohio. Mr. Gamble, formerly president of Pump Engineering Service Corp., is vice president and general manager of the Borg & Beck Division, Borg-Warner Corp., Chicago.

JEAN PAUL LEVI has become associated with the American Prototype Corp., New York. Formerly he was director, Latil Industrial Vehicles, Ltd., Letchworth, Herts, England.

MELVIN N. LEFLER, who has been chief engineer, Lundelius & Eccleston, Los Angeles, now is designing engineer, C. F. Brown Co., Alhambra, Calif. The latter company makes oil refinery equipment.

Four SAE men are members of the Automotive Defense Industry Advisory Committee set up by OPM to represent the manufacturers of passenger cars, trucks, buses, taxicabs and fighting equipment. They are: **B. E. HUTCHINSON,** Chrysler Corp.; **PAUL HOFFMAN,** Studebaker Corp.; **JOSEPH W. FRAZER,** Willys Overland Motors, Inc., and **A. E. BARIT,** Hudson Motor Car Co.

REYNOLD L. CALEEN was one of eleven young industrial executives, nominated by industries in all parts of the United States, to receive Alfred P. Sloan Fellowships for an intensive one-year cooperative program of executive development in business administration and economics at the Massachusetts Institute of Technology. He is installation engineer, Pratt & Whitney Aircraft Division, United Aircraft Corp., East Hartford, Conn.

W. W. LOWE, Cities Service Co., N. Y., **ARTHUR E. PEW, JR.,** Sun Oil Co., Philadelphia, and **GEORGE TABER,** Sinclair Refining Co., N. Y., are on the District 1 Refining Committee set-up by Secretary Ickes as part of a committee network representing all branches of the petroleum industry to consult his office on oil problems related to the rearmament program. District 1 includes the eastern coast states, from Maine to Florida.

JOHN S. EDGAR is now production engineer, Thompson Products, Ltd., St. Catharines, Ontario, Can.

PERCY A. SOICHER, University of Michigan graduate, enters the engineering division, General Motors of Canada, Ltd., Oshawa, Ont., as draftsman.

B. B. BACHMAN has been appointed as a member of the SAE Ordnance Advisory Committee, upon confirmation by the Council.

EDWARD GEORGE GRINHAM has resigned from the Standard Motor Co., Ltd., Coventry, England, where he held a position as director, chief engineer, and joined the de Havilland Aircraft Co., Ltd., Hatfield Aerodrome, Herts., England, as general production manager.

E. G. Grinham
de Havilland
Production
Manager

HARRY DeSILVA was appointed as alternate of SAE representative T. C. Smith on the National Conference On Uniform Traffic Accident Statistics.

COL. GEORGE A. GREEN, aide to lease-lend program coordinator W. Averell Harriman, flew with Mr. Harriman from England to the Middle East in June to study first-hand British tank requirements in that area. The visit was expected to last from 7 to 10 weeks. Col. Green, on leave from his post as vice president of engineering, General Motors Truck & Coach Division, Yellow Truck & Coach Mfg. Co., originally joined Mr. Harriman in England late in March of this year (SAE Journal, May, 1941, p. 21).

EDWARD P. WARNER, SAE past president, who went to England in June as staff assistant to Mr. Harriman on problems having to do with aeronautic equipment, has completed his mission, returned to the United States, and has resumed his duties as vice chairman of the Civil Aeronautics Board.

WILLIAM S. JAMES, chief engineer, Studebaker Corp., has been appointed a member of the National Research Council representing the SAE. The appointment is for two years.

R. G. McMAHAN has been named automotive engineer, Socony-Vacuum Oil Co., Inc., Lapel, Indiana. He was formerly lubrication engineer, Cities Service Oil Co., Chicago.

HECTOR J. ALEXANDER is now piloting bombers to Britain, for Consolidated Aircraft Corp., and between flights is stationed at Flushing, L. I. Formerly he was manager of the Port Washington Sea Plane Base, North Beach Air Service, Long Island.

LISLE D. BYCE recently became works superintendent, Ottawa Car & Aircraft, Ltd., Can. He was formerly technical adviser to the board of directors, Ottawa Car Mfg. Co., Ltd.

ROBERT W. LESLIE has resigned as director of research and process development, Skelly Oil Co., El Dorado, Kan., where he has served for the past 11 years, to become manager of refinery operations, Wasatch Oil Refining Co., Salt Lake City, Utah, and the Idaho Refining Co., Pocatello, Idaho.

HOLLISTER MOORE has been named manager of the SAE membership department, following six years with the Society as assistant editor of the SAE Journal. Mr. Moore was previously associated with the American Standards Association, spent several years as manager of commercial research for the Chilton Co. of Philadelphia, and at one time was engaged in consumer research work on the Pacific Coast. He is a graduate of University of California at Los Angeles.

Mr. Moore's appointment, according to SAE General Manager **JOHN A. C. WARNER,** constitutes an expansion of personnel to meet the enlarged problems brought about by rapidly increasing membership activities. **E. F. LOWE,** SAE assistant general manager, will intensify his membership activities in the field and will continue direct supervision of the Sections and Placement departments.

Membership Manager

Hollister Moore

GUS A. **GOESELE** has resigned from the War Department, Washington, D. C., where he held the position as supervisor of spare parts, Order Determination Unit, in the office of the Chief of Ordnance, to rejoin the General Motors Overseas Operations for a special overseas appointment.

THOMAS J. KIELY has been appointed sales manager, aviation division, American Bosch Corp. He has been associated with American Bosch since 1923, for most of this period in the engineering department, where he has been closely connected with the development and application of aviation magnetos.

FRED GLEN SHOEMAKER, formerly vice chairman, has been appointed chairman of the Diesel-Engine Division, SAE Standards Committee, to fill the vacancy caused by the death of Walter S. Cochrane. Mr. Shoemaker is chief engineer, Detroit Diesel Engine Division, General Motors Corp.

RALPH S. WHITE has been made senior aeronautical engineer in charge of the power plant unit, Aircraft Airworthiness Section, Civil Aeronautics Administration. Prior to this advancement he was aeronautical engineer.

G. A. Hope
Transferred

GERARD A. HOPE, formerly supervisor, auto laboratory, technical service division, Socony-Vacuum Oil Co., Inc., N. Y., has recently been transferred to the Washington, D. C., office.

CHARLES E. WILSON, president, General Motors Corp., received an honorary degree of Doctor of Laws from Wayne University at June commencement exercises.

CHESTER ARTHUR CLARK is now employed as electrical designer, office engineers, Panama Canal, Balboa, Canal Zone. Prior to appointment he was mechanical engineer, Plant Engineering Division, Packard Motor Car Co., Detroit.

HARRY T. WOOLSON has been named as representative of the SAE to attend the 175th Anniversary Celebration at Rutgers University, Oct. 9-11. Mr. Woolson is president of the Chrysler Institute of Technology and executive engineer of Chrysler Corp.

CHARLES S. DOERR has resigned his connection as superintendent of maintenance and personnel, Gray Line Motor Tours, Washington, D. C., to enter government service as technical adviser on maintenance in the Motor Transport Division, Office of the Quartermaster General, Washington, D. C.

HOMER W. CLAPPER has been transferred to the Cincinnati Division, Wright Aeronautical Corp., as supervisor of service division activities. Formerly he was field service engineer at the Wright Paterson, N. J., office.

HARRY R. LEWIS, former president and member of the board of directors, Conewango Refining Co., and president and member of the board of Hyvis Oils, Inc., both of which are wholly owned by Sinclair Refining Co., resigned these posts and his position with the Sinclair Refining Co. recently, to form the Harry R. Lewis Co. The new company will render three services to the petroleum industries – development of new products, assistance in marketing, and brokerage.

NATHAN ROBERT ROSENGARTEN, formerly junior designer, Pratt & Whitney Aircraft Division, United Aircraft Corp., East Hartford, Conn., was recently named flight engineer, Wright Field, Materiel Division, Dayton, Ohio.

WILMONT B. FLANDERS has been advanced from test engineer to assistant project engineer, Wright Aeronautical Corp., Cincinnati Division, Lockland, Ohio.

ARCH WARNER has been promoted to assistant works manager of the mechanics universal joint division, Borg-Warner Corp., Rockford, Ill. Prior to his transfer to Rockford, Mr. Warner worked in the Detroit office, doing sales and engineering work.

Steps which the United States has recently taken to tighten the defense plans were told by SAE President **ARCH T. COLWELL,** at the dinner meeting which concluded the annual Spring Reunion of the Valley of New Castle Consistory, Ancient Accepted Scottish Rites of New Castle, Pa., in the Cathedral, Friday evening, June 13.

Mr. Colwell pointed out the fact that observations have revealed that in no case where aircraft has accompanied ships has a single vessel been lost, and that comparisons have proven that the planes made by the United States are far and above the best in the world.

Student Members Placed In Automotive Industry

The SAE Student Branch at the University of Wisconsin reports that practically every member graduating with the Class of '41 had a job waiting for him as soon as he received his sheepskin, and that most of these jobs are in the automotive field.

Here's where they are placed: Wallace Anderson, *Linde Air Products;* Everett Barlow, *Johnson Service Co.;* Bob Bennewitz, *Linde Air Products;* Charles Borcher, *General Motors Proving Ground;* Arthur Burns, *Standard Oil Co. of Calif.;* Burton Clark, *own agency in Milwaukee for Buda diesel engines;* John Erdahl, *Cadillac;* Joe Firey, *instructor, University of Wisconsin;* Clarence Fralick, *International Harvester Co.;* Ralph Harker, *Hamilton Standard Propellers;* Lawrence Jacobsen, *Ethyl Gasoline Corp.;* Leo Jeselun, *Johnson Service Co.;* Ed Katz, *Pratt & Whitney Aircraft;* Robert Kurtenacker, *Gardiner Machine Co.;* Dan Lamb, *Wright Aeronautical Corp.;* Ernest Panthofer, *Perfex Corp.;* Phil Place, *National Supply Co.;* Frank Roberts, *E. I. du Pont de Nemours & Co., Inc.;* Ben Rowe, *Pratt & Whitney Aircraft;* F. Schiffer, *Public Service Corp. of N. J.;* W. Wagner, *U. S. Army;* Ernest Wallner, *Carnegie-Illinois Steel Corp.;* Roger Wright, *Standard Oil Co. (Ohio).*

A. HAROLD FRAUENTHAL, formerly vice president, general manager, Bantam Bearings Corp., South Bend, has been named president, Kaydon Engineering Corp., Muskegon, Mich.

GEORGE W. BORG has resigned as chairman, Borg-Warner Corp., Chicago, because of the increasing burden of other

Assumes Defense Duties

George W. Borg

duties in connection with National Defense. SAE member **C. S. DAVIS,** president of the company, will assume Mr. Borg's responsibilities. Directors voted to discontinue the position of chairman.

WARREN V. PRINCE has recently been named development engineer, The Acrotorque Co., Cleveland. He formerly was connected with Thompson Products, Inc., Cleveland, as tool development engineer.

EDWIN W. PASCOE, assistant project engineer, Wright Aeronautical Corp., recently left the Paterson, N. J., branch to go to the Lockland, Cincinnati branch, where he will work in the same capacity.

ARTHUR YOUNGS has resigned as proprietor, Youngs & Co., Newburgh, N. Y., to become engineering coordinator, Browning Machine Gun Division, Savage Arms Corp., Utica, N. Y.

HARRY G. BALDWIN recently received a Civil Service appointment as senior mechanical engineer, Hartford Ordnance District, Springfield, Mass.

NICHOLAS J. ZARO, formerly located in Detroit as production engineer, General Motors Overseas Operations, is now technical assistant to the managing director, General Motors New Zealand Limited, Wellington, New Zealand.

NELS E. NYLIN is senior design engineer, Machinery Mfg. Co., Division Machinery Sales Co., Los Angeles, having resigned as plant engineer, Lockheed Aircraft Corp., Burbank, Calif.

NORMAN G. SHIDLE, executive editor, and **THOMAS A. BISSELL,** technical editor, SAE Journal, are co-authors of the 5th edition of "Motor Vehicles and Their Engines," recently published by D. Van Nostrand Co. Designed as a text book for students approaching the subject for the first time, the volume includes a special chapter describing modifications made in

design of commercial vehicles to adapt them to military purposes and outlining special features of military motor vehicles of all capacities.

RALPH H. KRESS, formerly fleet sales engineer, Fleet Sales Division, General Motors Sales Corp., Detroit, has been advanced to New England zone manager, same company.

LEE G. SNYDER has been promoted from senior layout checker to electrical design engineer on all airplane projects, Vega Airplane Co., Division Lockheed Aircraft Corp., Burbank, Calif.

LOREN D. GILMORE was among the 30 students selected, from six leading engineering colleges of the United States, to enter the Chrysler Institute of Engineering, Detroit, sponsored by Chrysler Corp. Entering the Institute July 1, Gilmore will work for a M.S. degree in automotive operation, having recently received his M.E. degree at Purdue University. As a senior at Purdue, he was awarded the Cary History Cup for making the highest grade in the course in senior military history and policy. When graduated he received his second lieutenant's commission in field artillery as a reserve officer of the U. S. Army.

HARRY DORSETT SMITH is now sales engineer and New York district manager, Globe Hoist Co., Philadelphia. Formerly he was a manufacturer's representative in New York.

JEAN S. SMITH has been promoted from advertising assistant to field engineer, Wright Aeronautical Corp., Paterson, N. J.

JAMES A. THOMPSON joined the Curtis Pump Co., Dayton, Ohio, immediately following his graduation from Massachusetts Institute of Technology in June. Mr. Thompson received a B.S. degree.

RENÉ BERG, president, Société René Berg, Paris, manufacturer of automotive and allied equipment, and for several years agent for Waukesha Motor Co., Brown Instrument Division, Minneapolis Honeywell Regulator Co., and other American manufacturers, is in New York with his wife. They were able to flee from France before the fall of Paris, and he is seeking a business connection in this country.

EDGAR R. HERRMANN is now employed as junior engineer, B. F. Goodrich Co., Akron, O. Formerly he was methods engineer, Yale & Towne Mfg. Co., Stamford, Conn.

HAROLD A. STORCH goes with Harris Products Co., Detroit, as development engineer, having resigned as experimental draftsman, Fisher Body Division, General Motors Corp., Detroit.

CHARLES H. HELLING, formerly technical correspondent, General Motors Corp., has been named research engineer, Eisemann Magneto Corp., N. Y.

FRED J. GRUMME is now assistant maintenance superintendent, Aero Mayflower Transit Co., Indianapolis. He was formerly eastern maintenance superintendent, Irvington, N. J.

THERON R. KELLEY has been named diesel field engineer, Superior Engine Division, National Supply Co., Springfield, Ohio. Formerly he was diesel field engineer, Waukesha Motor Co., Waukesha, Wis.

T. F. BERGMANN, formerly field engineering representative, Materiel Division, Wright Field, Wright Aeronautical Corp.,

★★★★★★★★★★★★★★★★★★★★★★★★★

In Military Services

LT.-COL. M. V. BRUNSON is now commanding officer of the 392nd Q.M. Battalion at Fort Hamilton, Brooklyn, N. Y.

H. K. PERRILL, Lt.-Com., U.S.N., formerly superintendent, aeronautical engineering laboratory, Naval Aircraft Factory, Philadelphia, is reporting for duty at the Naval Air Station, Jacksonville, Fla., where he will be assistant assembly and repair officer.

EDWIN A. SMITH is a lieutenant-colonel, 40th Armored Regiment, 3rd Armored Division, Camp Polk, La., having formerly been automotive test officer, Infantry, U. S. Army, Infantry Board, Fort Benning, Ga.

D. G. SAMARAS has been called to duty with the Royal Canadian Air Force, where he holds the position of flying officer and aero engineer.

C. L. FIKE holds the rank of major, U. S. Marine Corps, commanding Marine Fighting Squadron 2, Second Marine Air Group, Pearl Harbor, Hawaii. Formerly he was with the U. S. Marine Corps, V.M.F. 2, U. S. Naval Air Station, San Diego, Calif.

HORACE RICHARD HIGGINS is 1st lieutenant, U. S. Army, Quartermaster Corps, Motor Transport Division, field inspection branch, Washington, D. C., having left the National Bureau of Standards, Washington.

DE OWEN NICHOLS, JR., is on active duty at Aberdeen Proving Ground, Md., as 1st lieutenant, Ordnance Department. Previously he was engine specialist, U. S. Army, office of chief of ordnance, technical staff, Automotive Section, Washington, D. C.

JOOP P. VAN OVERVEEN, formerly junior engineer, estimating department, American Locomotive Co., is now a private and assistant instructor, tank school, engine test division, U. S. Army, Company B, Armored Force School Detachment, Fort Knox, Ky.

ROBERT WILSON ZINN and **WALTER J. WAGNER** are flying cadets of the U. S. Army Air Corps stationed at Chanute Field, Ill. Mr. Zinn was formerly physical tester, Inland Mfg. Division, General Motors Corp., Dayton, Ohio, and Mr. Wagner was connected with the U. S. Army, Cavalry Replacement Center, Fort Riley, Kansas.

★★★★★★★★★★★★★★★★★★★★★★★★★

BREAKING GROUND FOR NEW ANTI-AIRCRAFT PLANT

DAVID A. WALLACE, president of Chrysler Sales Division, wields shovel in the ground-breaking exercises for a new Chrysler plant in which will be made parts for the 40-mm rapid-fire anti-aircraft gun to be manufactured for the United States government. The plant, located at Kercheval and Corey, will have a total floor space of 125,000 sq ft. Some bomber parts also will be made in this building, which will be in operation by fall

Paterson, N. J., has been named sales representative, Wright Aero, Ltd., Los Angeles. The latter company is the west coast representative for Wright.

SAMUEL UNTERMYER, 2nd, has taken the post of assistant diesel engineer, U. S. Navy Department, Bureau of Ships, Washington, D. C. Formerly he was in the engineering department, Mack Mfg. Co., Allentown, Pa.

A. R. Walker
Sales
Engineer

Formerly electrical engineer, equipment, Illinois Central System, Chicago, **ALFRED RUSSELL WALKER** is now automotive sales engineer, American Car & Foundry Co., N. Y.

MELVIN H. YOUNG steps from assistant project engineer to chief of Materials Laboratory, Wright Aeronautical Corp., Paterson, N. J.

Former layout draftsman, Bellanca Aircraft Corp., New Castle, Del., **JOSEPH E. RUSSEK, JR.,** goes over to Bendix Aviation Products Co., South Bend, Ind., in a similar capacity.

WILLIAM E. HORENBURGER recently became associate editor, *MoTor* Magazine, New York. Formerly he was automotive engineer, service, National Carbon Co., Inc., N. Y.

Cooper Union student, **ARTHUR G. HOLMS** is now employed by Ranger Aircraft Engines, Division Fairchild Engine & Airplane Corp., Farmingdale, L. I., as a student engineer doing engine testing.

ROBERT A. HITCH is now a Glenn L. Martin Co. engineer. He was formerly a University of Michigan student.

G. GRAHAM DAVIDSON is now structures engineer, Curtiss-Wright Corp., Columbus, Ohio. Formerly he was aeronautical engineer, St. Louis Airplane Division, Curtiss-Wright Corp., Robertson, Mo.

JOSEPH DANIEL McCARTHY, formerly with Aero Industries Technical Institute, is an inspector, Consolidated Aircraft Corp., San Diego, Calif.

Resigning as assistant to the president, Menasco Mfg. Co., Burbank, Calif., **PAUL H. WHITE, JR.,** has joined the staff of the Airsupply Co., Los Angeles.

A. MARTIN WEIDINGER has been advanced from chief instructor of engines, Ryan School of Aeronautics, Hemet, Calif., to director of the ground school.

JOHN L. WEBB is now employed as a junior research engineer in the laboratories of the Shell Oil Co., Inc., Wood River, Ill. He was formerly junior draftsman, General Motors Truck & Coach Division, Yellow Truck & Coach Mfg. Co., Pontiac, Mich.

EMIL PANSKY, formerly at Cooper Union, recently joined Glenn L. Martin Co., Middle River, Md., as junior inspector.

SAE Coming Events

Sept. 25 – 26	**National Tractor Meeting** **Schroeder Hotel – Milwaukee, Wis.**
Oct. 23 – 24	**National Fuels & Lubricants Meeting** **Mayo Hotel – Tulsa, Okla.**
Oct. 30 – 31 & Nov. 1	**National Aircraft Production Meeting (and Engineering Display)** **Biltmore Hotel – Los Angeles, Calif.**
Nov. 5 – 6	**West Coast Transportation & Maintenance Meeting – San Francisco, Calif.**
Nov. 13 – 14	**National Transportation & Maintenance Meeting** **Statler Hotel – Cleveland, Ohio**
Jan. 12 – 16, 1942	**SAE Annual Meeting (and Engineering Display)** **Book Cadillac Hotel – Detroit, Mich.**

Obituaries

Fred J. Fisher

The eldest of the seven brothers who made the slogan "Body by Fisher" an American household phrase, Fred J. Fisher, died July 14, in the Henry Ford Hospital in Detroit, at the age of 63.

Mr. Fisher was stricken with pneumonia several weeks before his death, which resulted from a heart malady. He leaves, besides his six brothers, a widow and three sisters.

When Mr. Fisher was a very young man he told a friend, "I'm going to have $50,000 when I'm 50 years old and then I'm going to retire." When he was 50 his fortune more nearly approximated $50,000,000 and he was still active in the business world.

Mr. Fisher was born in Sandusky, Ohio, Jan. 2, 1878, received his early training in his father's carriage building business. By the time he was 25, Fred Fisher was an expert carriage-builder. In 1902, he obtained a $4 a day job as draftsman with the Wilson Carriage Works, Detroit, of which he became general manager in 1907. It was shortly after that time that all the Fisher brothers came to Detroit and set up business.

The Fisher company grew tremendously under the direction of Fred Fisher in its first twenty-one years. In 1920, the stock issue of the corporation was expanded from 200,000 to 500,000 shares. In 1923, it was taken over by General Motors, which gave the brothers $208,000,000 in stock for the business. Mr. Fisher became a GM vice president and the next year added the title of general manager. He held these positions until 1934, when he and his brother Charles, also a GM executive, resigned to devote their time to personal affairs.

At the time of his death Mr. Fisher was chairman of Fisher & Co., organized to handle the family's extensive affairs, president of the Senior Investment Corp., and a director of Udylite Corp., United Chromium, Inc., Michigan Central Railway, C.C.C. & St. L. R.R. Co., Ford Instrument Co., Waterbury Tool Co., Michigan Bell Telephone Co., Postal Telegraph & Cable Co., National Bank of Detroit, Sperry Corp., and the Intercontinent Trust Company of Chicago.

With his wife, the former Burtha Meyers whom he married in 1908, Mr. Fisher was donor of the Burtha M. Fisher Home for the Aged Poor in Detroit. In 1928 he also founded the Burtha M. Fisher House of Providence Hospital in Detroit.

Mr. Fisher joined the SAE in 1910. He was a trustee of the University of Notre Dame, the Detroit Symphony Society and the Detroit Community Fund. He held the honorary degree of LL.D. from the University of Detroit and that of Doctor of Engineering from Notre Dame.

Lord Herbert Austin

England lost one of her most brilliant automobile geniuses on May 23 when Lord Herbert Austin died at his Lickey Grange home near Bromsgrove, at the age of 75.

Lord Austin, K.B.E., LL.D., J.P., "Father of the Baby Car," was born in Little Missenden, Buckinghamshire on Nov. 8, 1866. He was educated at Rotherham Grammar School and Brampton College and began his career when he went with an uncle to Australia in 1884, there commencing his apprenticeship at Langland's Foundry, Melbourne. From this apprenticeship, he went to the Wolseley Sheep-Shearing Machine Co., Ltd., and his ability soon won him the post of manager.

Herbert Austin returned to Birmingham in 1893 to supervise the manufacture of his company's products. As the demand for shearing machines was largely seasonal, the Wolseley Sheep-Shearing Machine Co., turn-

ed its attention to bicycle components and machine parts. This led to the development of a three-wheeler automobile designed by Lord Austin, an improved model of which won the 1,000 mile trial of 1900 and first prize.

Due to the firm's success and possibilities of expansion, Vickers Sons & Maxim were approached to take over the machine tool and motor side of the business. This scheme matured, and in 1901 Herbert Austin became general manager of the Wolseley Tool & Car Co., Ltd.

With a strong desire to be entirely his own master, Lord Austin later founded the Austin Motor Car Co., Ltd., in 1905. Despite the fact that only 120 "baby" cars were turned out by the end of 1906, the company grew rapidly.

Just previous to the commencement of the present war, Austin production was rated at 78,000 cars and commercial vehicles per annum.

During the last war, Longbridge, site of the Austin plant, became a great munitions works producing millions of shells and other war material, and it was in recognition of this important service that Herbert Austin was made Knight of the British Empire.

The set purpose which always dominated Lord Austin's Life – namely, to place motor travel at the disposal of everyone in the community – pushed Austin, Ltd., into a commanding position in the English automobile industry. To maintain its leadership necessitated a close and constant study of Continental and American design; thus Lord Austin was a frequent visitor to the Continent and the United States.

Lord Austin has held nearly all the highest offices in the motor industry, and many engineering societies have shown their recognition of his ability and genius by conferring upon him their highest awards. He became a member of the SAE in 1928.

Lord Austin presented considerable sums to many hospitals for the provision of scientific equipment for deep-ray therapy and the treatment of cancer, but perhaps his most munificent gift was that of $250,000 to the University of Cambridge for the Cavendish Laboratory.

Edward M. Schick

Edward M. Schick, chief engineer, design, Machinery Builders, Inc., Long Island City, N. Y., died on June 16. He had been with this company since 1938, during which time he supervised the construction and installation of machinery in the exhibit area of the New York World's Fair.

A native of Pitesti, Hungary, Mr. Schick graduated from the University of Charlottenburg in 1926. Directly upon leaving college he became associated with General Motors in Berlin as designer and plant engineer. By 1930 he was in the assembly plant as assistant chief inspector, then soon left to establish a garage and service station under his own name, where he sold Oldsmobile cars.

In 1938, Mr. Schick came to this country and joined the staff of Machinery Builders, Inc. Just a year before he became a member of the Society of Automotive Engineers.

SAE Lubricants Group To Advise Government

A LUBRICANTS Advisory Committee, originally requested by the National Bureau of Standards, made up of six men to be available for collaboration with the Bureau of Standards and other government agencies in an advisory capacity on any problems properly within its scope, was approved by the Council.

President Colwell appointed the following six men to serve on the committee: J. B. Macauley, Jr., Chrysler Corp., chairman, to serve also on SAE National Defense Committee; J. M. Campbell, General Motors Research Division; J. B. Fisher, Waukesha Motor Co.; Raymond Haskell, The Texas Co.; W. M. Holaday, Socony-Vacuum Oil Co., Inc.; and C. G. A. Rosen, Caterpillar Tractor Co.

About Authors

(*Concluded from page 13*)

During World War I he served as captain in the Gas Defense Division of the Chemical Warfare Service. Since 1919 Mr. Evans has been a member of the development department of Goodyear Tire & Rubber Co., specializing in the design and testing of pneumatic tires.

■ ERNEST F. FIOCK, *senior physicist in the Automotive Power Plants Section of the National Bureau of Standards, has been on the Bureau staff since 1926, the year in which he received his Ph.D. in physical chemistry at the University of Illinois. Until 1932, he assisted in determining the properties of steam, and for the past nine years has been engaged in research on the fundamentals of the burning process. These studies of explosions in gases, conducted in cooperation with the National Advisory Committee for Aeronautics, provide a background for the author's conceptions of gaseous combustion.*

■ STEPHEN JOHNSON, JR., *(M '30) began his training as a machinist's apprentice, and later attended the University of Michigan. He was graduated in 1923 with a B.S. degree in engineering, and entered the employ of the Westinghouse Air Brake Co., Pittsburgh. Some time later Mr. Johnson was sent to the Chicago office of the Westinghouse Air Brake Co. as a mechanical expert and later became assistant district engineer. In 1929 he was transferred to Pittsburgh as general engineer of the Automotive Division, which subsequently became the Bendix-Westinghouse Automotive Air Brake Co. in 1930. He still holds this position. He is a past vice president of the SAE, has served on numerous committees, and has contributed a number of papers to both Section and National meetings.*

■ SAMUEL J. LORING *was graduated from M.I.T. with a B.S. degree in 1936, and went immediately with the Chance-Vought Aircraft Division (now Vought-Sikorsky) of the United Aircraft Corp., where he has been ever since. For several years he was engaged in stress analysis and structural design, but for the past two years, since flutter has become important, he has turned almost all his efforts to the solution of that problem as it concerns design. During this time he has been in charge of all vibration and flutter activities and research at Vought-Sikorsky.*

■ *Since 1936,* J. G. McNAB *has been with the Standard Oil Development Co. engaged in laboratory and preliminary plant development work on addition agents designed to improve the physical and chemical properties of mineral crankcase lubricants, particularly those employed under severe-duty conditions. He attended the University of Chicago, graduating in 1936, with a Ph.D. degree.*

■ F. LAVERNE MILLER *(M '32), has been with the Standard Oil Development Co. since 1930, progressing steadily to his present position as assistant director of the Research Division of the Esso Laboratories, in which capacity he is responsible for the administration and direction of research on fuels, lubricants, and other petroleum products and processes. He has been actively associated with many of the developments relating to lubricating oils during recent years. He holds several patents in this field, and has appeared as an author or co-author of a number of papers which have been presented or published on various lubricants subjects. He has also been active in the work of many of the lubricants committees of the SAE and ASTM. During 1937-38 he was vice chairman of the Fuels and Lubricants Activity of the Metropolitan Section, and chairman of the committee on chemistry of the Conference on Electrical Insulation, National Research Council. Dr. Miller received his Ph.D. degree from the University of Michigan in 1929.*

■ FORD L. PRESCOTT *is senior mechanical engineer (research), U. S. Air Corps, Materiel Division, Wright Field, Dayton, Ohio. There he has been working since 1929. Previous to that he was associate professor of mechanical engineering, University of Florida. His chief interest is aircraft-engine design and research; he is project engineer on some of the later liquid-cooled engine developments for military aircraft. Among his inventions are instruments for the study of torsional vibration and of pressure phenomena in internal combustion engines. He has been granted several patents on engines and instruments. Mr. Prescott has presented papers to both the SAE and ASME on engine design and research problems. He received a B.S. degree in mechanical engineering, June, 1923, and an M.E. degree, June, 1925, from the University of Florida.*

■ *Upon receiving a B.S. in chemical engineering at Carnegie Tech in 1926,* W. C. WINNING *joined the engineering staff of the Standard Oil Development Co. Today he is with the same company, active in many phases of lubricant research, particularly in the development and application of additives in lubricants and also fuels. Mr. Winning holds some 20 patents in this and related fields.*

Engine Control Chart Aids Schedule Flying

■ So. California

TO insure a high constant bmep – which offers benefits in high engine efficiency, high durability, and low fuel consumption – the airline pilot must be provided with a simple direct form containing all the necessary information to meet his flight requirements. This statement summarized one of the main themes of the paper, "A Simplified Method of Engine Operation For Accurate Schedule Flying," delivered before the Southern California Section, Elks Club, Los Angeles, June 13. Authors of the paper were A. A. Barrie of Western Air Lines, and J. B. Cutting, Pratt & Whitney Aircraft.

Western Air Lines, according to Mr. Barrie, who delivered the paper, breaks a flight down into the following parts and has each part time-scheduled: from block to take-off point; take-off and climb to 500 ft; cruising climb; cruise; cruising descent to 500 ft; approach and landing; taxi to blocks.

Nine minutes are allowed in the schedule for taxiing, take-off, and climb to 500 ft with a half-turn bringing the ship even with the field, headed on the route. Twenty-eight minutes after leaving the blocks, the airplane is at 11,000 ft and 46 miles (plus or minus wind) on its way, said Mr. Barrie, adding that the procedure simplifies the calculating required of the crew during the preliminary part of the flight.

Any time lost in the take-off and climb must be made up in the last leg of the journey, which includes cruise, descent and approach, all involving variations in the speed of the airplane, Mr. Barrie stated.

The cruising control table used by the pilots after take-off, combines in one readily usable form information usually supplied in three separate graphs. It incorporates (1) the engine brake horsepower required against true airspeed and altitude (2) the rpm and manifold-pressure characteristics against power and altitude and (3) airspeed indicator calibration. Western Air Lines combines (1) and (2) with cruising power based on constant bmep. Consequently, Mr. Barrie said, below full throttle each constant power line calls for a constant rpm below the critical altitude for the selected bmep. This critical altitude shows as the full throttle line. Above this line, operation is at full throttle and diminishing bmep, the speaker said.

The third (3) unit used in calculation is combined with fuel consumption and then all factors are correlated to form what Mr. Barrie calls a "cartographer's dream."

Once the plane reaches the correct altitude after take-off, the above calculations are made and the engines are set for the indicated rpm; the plane then continues to next check point, where the accuracy of the original setting is determined. Such careful, point-to-point timing, Mr. Barrie stated, means that pilots are meeting their original arrival time estimates within 1 min. This compares notably with the 3-min discrepancy noted in average 250-mile flights before the plan was instigated.

Advantages of the system were summed up by Mr. Barrie as being; a simplification of the pilot's cruising calculations, an average reduction in engine speed of about 200 rpm even though at the same average power as previously used, and passenger good-will gained through on-schedule performance.

"Perhaps the best summation of this description of Western Air Lines cruise control," Mr. Barrie concluded, "is that the pilots like it, use it and make it do what its originators intended it to do."

Following the paper, Lewis W. Imm, president, Librascope, Inc. told of a dead reckoning and flight performance computor developed by his company.

"The performance side, with the exception of the entrance of the weight variable," Mr. Imm told the audience, "does not present any advantage over the chart described by Mr. Barrie. However," he said, "we do combine with the performance data, course, time, distance, and airspeed correction for altitude so that all variables may be correlated in a single operation."

Maintenance Forum Stresses Bearing Metals

■ No. California

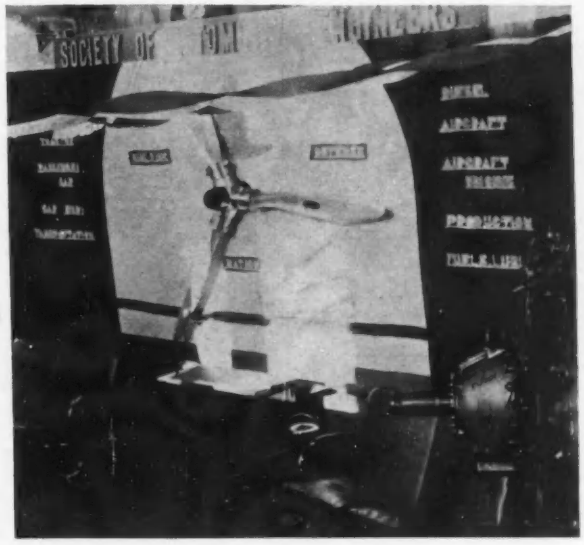
COPPER-LEAD bearings do not necessarily have lower life than cadmium silver bearings. This statement came from R. A. Watson, Federal Mogul Corp., one of the many speakers at the "Operation and Maintenance" forum, held at the June 10 meeting of the Northern California Section, San Francisco, Calif.

Under certain operating conditions the converse may be true, Mr. Watson continued, adding that copper-lead bearings will stand more pressure, especially at high temperatures, but must be plated with indium to avoid corrosion. This plating protects the lead, but, due to its inability to penetrate the copper, allows corrosion of copper if acid conditions prevail. Mr. Watson added that a corrosion failure may be recognized by eaten-away areas, while failure due to some other cause will show either impediments or cracks along lines of crystal structure and parallel to the shaft.

It is agreed that lubricating oils are now

Student Show

Members of the University of Wisconsin Student Branch arranged an SAE booth at a recent Engineering Exposition sponsored by the students in the engineering college. The U. of W. Student Branch held a picnic as its last meeting of the year



available which do not corrode bearings, stated Salazar E. Onorato, Union Oil Co.

F. W. Twining, Twining Laboratories, added that operators can protect themselves from acid corrosion by testing the neutralization number from time to time, new lubricants having minus neutralization numbers or an alkalinity.

Waste or sock-type filters, rather than clay type, should be used with compounded oils, said Mr. Onorato, in answer to a question by Edwin C. Wood, Pacific Gas & Electric Co.

It is not possible to completely charge a storage battery in less than 4 to 6 hr, stated W. A. MacQuarrie, Electric Storage Battery Co., in reply to a general forum question concerning effect on battery life of high charge rate. Explaining that the amount of current a battery will accept depends upon how much the battery is down, Mr. MacQuarrie pointed out that the ideal charger would be one of constant voltage. When charging a battery at constant amperage, the excess amperage appears as electrolysis and heat. Therefore, there is no harmful effect of fast charging so long as battery temperature does not exceed 125 F. As an example, a 100 AH battery which is completely down will reach 80 to 85% of its charge within one hour under the action of a 100-amp charge. To completely charge the battery, amp should be reduced to approximately 10 and held for 4 to 5 hr, he added.

Mr. MacQuarrie warned operators to look for the cause of run-down batteries and remedy the condition, since normally a battery should remain fully charged.

In response to further questions concerning importance of deposition of antimony on negative plates, Mr. MacQuarrie stated that in order to obtain mechanical strength, lead should be alloyed with antimony. During the charging process, some antimony is deposited on the negative plate where it forms electric couples, reducing the life of the battery. While the effect of antimony is undesirable chemically, it is thus necessary mechanically.

Sidney B. Shaw, Pacific Gas & Electric Co., added that operation of a group of light trucks under considerable knock conditions resulted in cracked pistons, but did not affect the bearings.

Charles A. Winslow, Winslow Engineering Co., described a badly-pinging industrial installation which knocked out its bearings when fitted with aluminum pistons and gave satisfactory bearing life when fitted with cast iron pistons, thus presenting further evidence that heavy pistons tend to save the bearings from high peak pressures.

Comparing Ring Operation

The best way to compare ring operation is to put several different makes of rings in the same engine, stated Mr. Shaw in discussing a general question on piston rings. Wide, free oil slots are better than drilled holes or narrow slots, he stated, adding also that a wide top ring increases life of ring and cylinder liner. This is due to the fact that better film conditions prevail with a wide ring.

Mr. Shaw stated that tests have not yet been made on plated or specially filled rings, to a question by Hans Bohuslav, Enterprise Engine & Foundry Co.

Holding crankcase temperature at 140 F or above, is the only way to prevent water sludge formation, stated Edwin E. Charles of General Petroleum Corp., in answer to a general forum question. On door-to-door delivery equipment which may idle 90% of its time, asbestos covers and/or electric heaters are recommended.

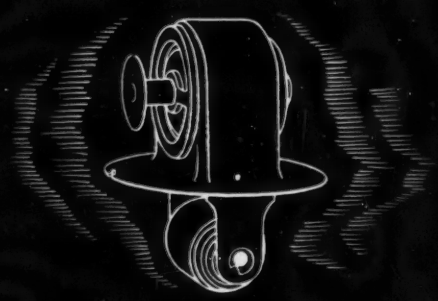
A comparison between gasoline and diesel engines in identical service conditions is not yet possible due to insufficient service experience with diesels, stated Mr. Shaw in answer to a general forum question.

Mr. Charles confirmed this statement, adding that while gasoline engines are at present running more miles between overhauls, diesel engine maintenance schedules are still in a development period.

Gasoline equipped vehicles are more economical up to 60,000 miles per year, while for yearly mileages in excess of 60,000, diesel-engine operation is more economical, stated Peter Glade of Purity Stores.

Intake-manifold temperatures are fairly constant for most makes of engine due to the general use of manifold thermostats and range between 120 and 160 F, stated Mr. W. V. Hanley, Standard Oil Co. of Calif., in answer to another question. An exception is the Ford, which runs 110, 120 F and gives satisfactory distribution at this lower temperature due to design of manifold. It was pointed out, by other discussers, that the knock rating of cracked fuels is affected more by changes in manifold temperature than straight-run fuels.

In reply to a question as to whether de-



PRECISION BUILT TO MAINTAIN PREDETERMINED TEMPERATURE CONTROL

● Because automotive engineers constantly stake their reputation on equipment's ability to perform under a wide variety of road, load and weather conditions, they can make no compromise with precision.

It is significant that a large majority of leading automotive engineers depend on Dole Thermostats for precise pre-determined motor temperature control . . . and specify Dole Thermostatic Bi-Metal to assure accurate temperature response in devices of their own development.

Dole Double Port Poppet Type Thermostat . . . the leader in a line of star performers . . . positively eliminates sticking, binding and friction; it is balanced to control the circulation and temperature of water regardless of pump pressure.

Dole Thermostatic Bi-Metal . . . made to exacting specifications by time-tested precision procedures . . . are available in sheets, strips, coils, and fabricated parts ready for assembly.

Write or wire our engineering staff about your particular requirements.

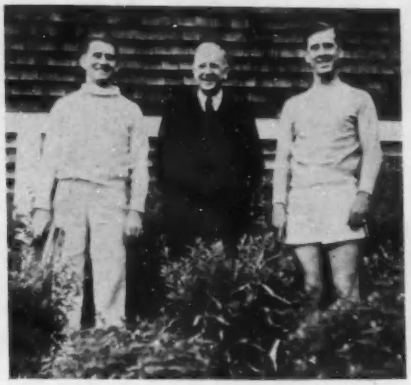
DEPENDABLE DOLE FITTINGS—Range from compression couplings for all tubing connections to a complete assortment of water line end hose line parts for automobile hot water heaters.

THE DOLE VALVE COMPANY
1901-41 Carroll Avenue • Chicago, Illinois
Detroit Office: General Motors Building

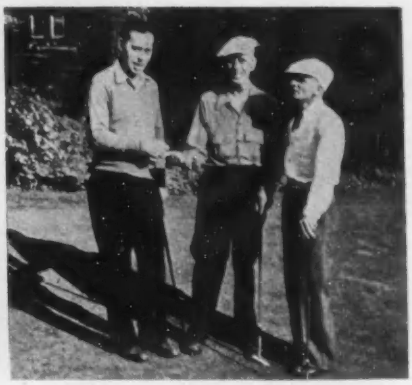
DOLE
Thermostats
AND THERMOSTATIC BI-METALS

Snapped at the 1941 Philadelphia Section Outing

(Left to right) J. E. Higgins and Harry Ferris, Autocar Co.; Charles O. Guernsey and Howard A. Flogaus, J. G. Brill Co.



(Left to right) Henry Jennings, Chilton Co.; Edward Lowe, assistant general manager, SAE, and H. N. Cluff, National Carbon Co., Inc.



(Left to right) Norman G. Shidle, executive editor, SAE Journal; J. P. Stewart, Socony-Vacuum Oil Co., Inc., and Fred Rodgers, White Motor Co.

GOLF and tennis were played at the Philadelphia Section Outing, May 14, at the Overbrook Country Club. In the evening, dinner and entertainment rounded out a full day of fun. This get-together concluded the Philadelphia Section activities until the fall, when technical meetings will be resumed

tergents are necessary in lube oil, Mr. Charles pointed out that while they are beneficial, the use of detergents may not be imperative since diesel engines operated satisfactorily prior to the time detergents were introduced. Mr. Onorato took exception to this statement, pointing out that present engines operate over much more severe conditions of temperature, speed and pressure and that for many makes of engines lubricating oil containing necessary detergents is necessary.

Compounded lubricating oils are recommended for every class of service, whether gasoline or diesel, according to Mr. Charles who pointed out that while they may not be absolutely necessary for some service, there is no record of their producing deleterious effects.

Mr. Onorato said he would not recommend unlimited use of compounded oils, but pointed out such oils had been very successful in many cases.

Mr. Shaw reported excellent results from using compounded diesel oil in gasoline truck engines.

Sub-par Golf Wins at Canadian Annual Tourney

Leo Wargin had the low gross and F. M. Buckingham the low net score at the annual Canadian Section golf tournament on June 20. Held at the Royal York Golf Club, Toronto, and followed by a dinner, the event brought prizes to 17 members and guests. About 130 participated in the dining and golf.

Winning the R. H. Combs Prest-O-Lite Trophy – a prize which his company is continuing to award following the recent death of the "Father of the Canadian Section" – Mr. Buckingham shot the course in one under par, registering a 36 on the back nine.

The Tiny Houston Trophy, awarded to the Past Section Chairman getting the lowest net, went to Charles Tilston. . . . A tripod-suspended iron pot labeled "British War Victims' Fund" attracted nearly $50 from those at the party.

ERRATUM

An error occurred in the A. T. Colwell-Milwaukee Section story on page 60 of the July, 1941 issue. The phrase "a 95% silver solder has good strength" should read, "95% lead and 5% silver solder has good strength."

NEW MEMBERS Qualified

These applicants who have qualified for admission to the Society have been welcomed into membership between June 15, 1941, and July 15, 1941.

The various grades of membership are indicated by: (M) Member; (A) Associate Member; (J) Junior; (Aff.) Affiliate Member; (SM) Service Member; (FM) Foreign Member.

Baltimore Section

Wilemon, William K., Capt. (SM) U. S. Army, Headquarters Third Corps Area, Room 540, Hearst Tower Bldg., Baltimore.

Buffalo Section

Walters, Wilson G. (J) junior engineer, Sterling Engine Co., 1270 Niagara St., Buffalo (mail) 167 Springville Ave.

Canadian Section

Loughrey, Frank Garfield (A) transportation manager, Purity Baking Co., Ltd., 21 Carr St., Toronto, Ontario (mail) 17 Clark St.

Lucas, John Allan (A) sales manager, tires, Dominion Rubber Co., Ltd., Kitchener, Ontario.

Nosotti, Andrew (J) engineer, Chrysler Corp. of Canada, Ltd., 300 Tecumseh Blvd., E., Windsor, Ontario (mail) 2307 Louis Ave.

Parks, Arthur Clemens (M) engineer, McKinnon Industries, Ltd., Engineering Department, St. Catharines, Ontario.

Cleveland Section

Bauer, John W. (M) chief engineer, Reid Products Division, Standard Products Co., Cleveland (mail) 13709 Kelso Ave.

Ford, John Thomas (J) draftsman, White Motor Co., 842 E. 79th St., Cleveland.

Musser, Vernon E. (J) power maintenance, Ohio Match Co., Wadsworth, Ohio (mail) Rittman, Ohio.

Detroit Section

Bealer, Irving Willis (J) Ford Motor Co., Dearborn, Mich. (mail) 2932 W. Grand Blvd., Detroit.

Brewster, Benjamin (M) engineer, Ethyl Gasoline Corp., 723 E. Milwaukee Ave., Detroit.

Carmichael, Thomas J. (M) technical assistant to director, General Motors Proving Ground, Milford, Mich.

Casse, Joseph E. (A) sales engineer, Thompson Products, Inc., 7881 Conant Road, Detroit.

Fox, Richard B. (M) chief inspector, Toledo Steel Products Co., Division of Thompson Products, Inc., 3300 Summit, Toledo, Ohio.

Huber, Paul (M) acoustical engineer, General Motors Corp., General Motors Proving Ground, Milford, Mich.

Kopec, Casimir S. (J) junior research

engineer, General Motors Corp., Research Laboratories, Second & Milwaukee, Detroit (mail) 474 Pearson St., Ferndale, Mich.

Searle, Thomas Charles (J) tool designer, Merz Engineering Co., Indianapolis (mail) 2001 E. Jefferson Ave., Detroit.

Segall, Amelius B. (A) research engineer, Detroit Aluminum & Brass Corp., 3975 Christopher Ave., Detroit.

Indiana Section

Lambertus, Peter (M) president, general manager, American Bearings Corp., 431 S. Harding St., Indianapolis.

Rice, Raymond Wilford (A) manager, Quality Tool & Die Co., 401 N. Noble St., Indianapolis (mail) 5774 Pleasant Run Blvd.

Wallace, Alvie T. (A) proprietor, Wallace Tool & Die Co., 916 Pierson St., Indianapolis.

Metropolitan Section

Hewitt, John Vance, Jr. (J) Ensign, U. S. Navy, Naval Training Station, Unit A, Bldg. 19, Norfolk, Va. (mail) 970 Park Ave., New York City.

Kirchner, Otto E. (M) chief engineer, American Airlines, Inc., New York Municipal Airport, Jackson Heights, L. I., N. Y.

Soverel, Malcolm C. (M) standardization engineer, Crocker-Wheeler Electric Mfg. Co., Ampere, N. J. (mail) 13 Pleasant Ave., Montclair, N. J.

Stix, Robert L. (J) executive secretary, Chrysler Corp., Tank Arsenal, 28251 Van Dyke, Macomb County, Mich. (mail) Box 405, Scarsdale, N. Y.

Stockard, Raymond Harris (J) carburetor engineer, Wright Aeronautical Corp., Paterson, N. J. (mail) 70 Payne Ave., Midland Park, N. J.

Milwaukee Section

Hartshorn, Floyd James, Jr. (M) sales engineer, Timken Roller Bearing Co., 715 N. Van Buren St., Milwaukee.

Yokel, Edward C. (J) designer, Twin Disc Clutch Co., 1328 Racine St., Racine, Wis.

Oregon Section

Bourne, John P. (A) superintendent, industrial lubrication sales, Standard Oil Co. of Calif., Portland, Ore. (mail) 2729 N. E. Brazee St.

Stuart, Kenneth Jerome (A) service and maintenance supervisor, Fleet Sales Division, General Motors Sales Corp., 1518 Financial Center Bldg., San Francisco (mail) 1201 S. E. Third Ave., Portland, Ore.

Philadelphia Section

Ambler, William S., Jr. (M) student, Auto Engineering & Machine Co., 4916 Germantown Ave., Philadelphia.

Berry, Ethan A. (A) works manager, Wissahickon Tool Works, Inc., Bala-Cynwyd, Pa.

Hafer, Paul R. (A) president, Boyertown Auto Body Works, Inc., Boyertown, Pa.

Pittsburgh Section

French, Chester O., Jr. (M) district auto engineer, Socony-Vacuum Oil Co., Inc., P. O. Box 191, McKees Rocks, Pa. (mail) 110 Bellevue Ave., Pittsburgh (2).

Southern California Section

Gardner, Floyd (A) automotive shop teacher, Frank Wiggins Trade School, 1646 S. Olive St., Los Angeles (mail) 241 Sycamore Glen, Pasadena, Calif.

Godknecht, Russell Adolph (J) design engineer, Airesearch Mfg. Co., 1740 Standard, Glendale, Calif. (mail) 529 Montana Ave., Santa Monica, Calif.

Spowart, George (M) engineer, American Brakeblok Division, American Brake Shoe & Foundry Co., 4600 Merritt Ave., Detroit (mail) 438 Chamber of Commerce Bldg., Los Angeles.

Thompson, Province H. (M) power plant engineer, Douglas Aircraft Co., Inc., Santa Monica, Calif. (mail) 14555 Dickens, Van Nuys, Calif.

Southern New England Section

Brown, Harry H., Jr. (J) service salesman, Brown & Thomas Automobile Co., 264 Whalley Ave., New Haven, Conn.

Washington Section

Burgan, Wilfred G. (S M) chief engineer, Motor Transport Division, U. S. Government, War Department, Room 4126, New Municipal Center Bldg., Fourth & Indiana Ave., N. W., Washington.

Harris, G. B. (S M) automotive engineer, U. S. Civilian Conservation Corps, Office of Director, c/o Chief Clerk, 209 Otis Bldg., 810 18th St., N. W., Washington.

Jobin, Robert J., Jr. (J) clerk, charge of mail room, U. S. Department of Agriculture, A.M.S., Room 2612 South Bldg., Washington.

Teckemeyer, Oscar W. (S M) associate equipment engineer, Department of the Interior, Fish & Wildlife Service, Washington (mail) 2920 McKinley St., N. W.

Foreign

Goode, Bruce Alfred (F M) director, technical representative, Glover & Goode Base Metals, Pty., Ltd., 188-92 Little Collins St., Melbourne, Victoria, Australia.

APPLICATIONS Received

The applications for membership received between June 15, 1941, and July 15, 1941, are listed below. The members of the Society are urged to send any pertinent information with regard to those listed which the Council should have for consideration prior to their election. It is requested that such communications from members be sent promptly.

Baltimore Section

Chappell, Paul F., manager, industrial service department, American Oil Co., Baltimore.

Nowell, Donald L., junior mechanical engineer, U. S. Naval Engineering Experiment Station, Annapolis, Md.

Canadian Section

Collins, John Ralph, assistant general manager, Provincial Transport Co., Montreal, Que., Canada.

Guy, Ross T., engineering draftsman, General Motors of Canada Ltd., Oshawa, Ont.

Wier, John E., service manager, Mack Trucks of Canada Ltd., Toronto, Ont.

Chicago Section

Ardussi, Wallace F., director of research, Foote Bros. Gear & Machine Corp., Chicago.

Damerel, William A., manager, Chicago sales office, The Maxim Silencer Co., Chicago.

Gerstung, Harry S., assistant project engineer, Sinclair Refining Co., East Chicago, Ind.

Cleveland Section

Leska, Carl J., engineer, Thompson Products, Inc., Cleveland.

Smetzer, John D., superintendent, Weatherhead Co., Cleveland.

Tanker, George E., apprentice director, Weatherhead Co., Cleveland.

Dayton Section

Hardy, Walter Lincoln, Lt., U. S. Army, Materiel Division, Air Corps, Wright Field, Dayton.

Reinhardt, Thomas Friant, junior mechanical engineer, War Department, Materiel Division, Air Corps, Wright Field, Dayton.

Detroit Section

Ahlers, Walter C., assistant district manager, SKF Industries, Inc., Detroit.

Bayles, Allison L., works manager, Hill Diesel Engine Co., Lansing, Mich.

Carlton, Chester L., designer, Briggs Mfg. Co., Detroit.

Crowe, William L., service representative, Detroit Diesel Engine Division, General Motors Corp., Detroit.

Greaves, Robert K., president, Sevaerg Metals Corp., Detroit.

Hatch, James W., sales engineer, Ex-Cell-O Corp., Detroit.

Hoxie, Ralph A., research engineer, Continental Aviation & Engineering Corp., Detroit.

Livingston, William B., assistant to president, General Motors Truck & Coach Division, Yellow Truck & Coach Mfg. Co., Pontiac, Mich.

Rightmyer, Holden W., chief engineer, The American Swiss Co., Toledo, O.

Indiana Section

Parker, James T., metallurgist, The Pierce Governor Co., Anderson, Ind.

Kansas City Section

Shubart, Charles Wendell, operations engineer, Mid-Continent Airlines, Inc., Kansas City, Mo.

Metropolitan Section

Burgess, Nathaniel D., test engineer, Wright Aeronautical Corp., Paterson, N. J.

Burrell, George, chief test pilot, Republic Aviation Corp., Farmingdale, L. I., N. Y.

De Lear, Nicholas L., sales engineer, King & Shepherd, New York.

Jacobs, Joseph J., research fellow, Polytechnic Institute of Brooklyn, Brooklyn, N. Y.

Miller, Wendell C., machine designer, Wright Aeronautical Corp., Paterson, N. J.

(*Concluded on page* 30)

When tanks were only tractors with tin Hats—

Hyatts kept them going—*then*
Hyatts keep them going—*now*

TANKS . . . the "surprise weapon" of the Allies in the last war . . . were inspired by tractors with crawler treads perfected by Holt. Cushioning the shocks, keeping operating parts running true, Hyatt Roller Bearings helped carry the load and ably won their chevrons. Then back to "civvies," improved Hyatts have been doing their peace-time job well ever since. Therefore, these dependable bearings are again being drafted for tanks as well as army trucks, gun mounts, airplanes and other equipment in today's defense program. Hyatt Bearings Division, General Motors Sales Corporation, Harrison, N. J., Chicago, Pittsburgh, Detroit, San Francisco.

PHOTO BY U. S. ARMY SIGNAL CORPS.
Like tanks, Hyatts have been improved in design, but their traditional quality manufacture prevails even through "all out" production.

HYATT
Quiet
ROLLER BEARINGS

(At top) Allied photo taken "Somewhere on the Western Front," 1915 is that of a Holt Caterpillar Tractor with front wheel . . . prototype of present "Caterpillar" full crawler tractor of today.

Applications Received

(*Concluded from page 28*)

Rice, William James, working foreman, Sol. Schildkraut, Inc., Jamaica, L. I., N. Y.

Skarbek, Henry F. J., chief draftsman, Breeze Corporations, Inc., Newark, N. J.

Milwaukee Section

Bauer, Earl Becker, educational director, Wisconsin Magneto Co., Milwaukee.

Phelps, Ross H., suspension engineer, Nash Motors Division, Nash-Kelvinator Corp., Kenosha, Wis.

Northern California Section

Chapman, W. R., shop foreman, Modesto Irrigation District, Modesto, Calif.

Long, William V., safety inspector, Bureau of Motor Carriers, Interstate Commerce Commission, San Francisco.

Muldoon, Matt E., manager, lubricating oil department, Signal Oil Co., Los Angeles. Mail: 633 36th St, Sacramento, Calif.

Northwest Section

Plumb, Robert N., fleet supervisor, Whatcom County Dairymen's Association, Bellingham, Wash.

Philadelphia Section

Kroening, Karl R., superintendent of equipment, Schuylkill Valley Lines, Inc., Norristown, Pa.

St. Louis Section

Brehm, Donald R., district manager, Bendix-Westinghouse Automotive Air Brake Co., Elyria, O. Mail: 718 Central Terminal Bldg., St. Louis.

Southern California Section

Ayers, John E., Sr., weight control supervisor, Vega Airplane Co., Division of Lockheed Aircraft Corp., Burbank, Calif.

Branning, Ralph Ivan, Jr., draftsman, Douglas Aircraft Co., Inc., El Segundo, Calif.

Carr, D. E., manager of research, Union Oil Co. of Calif., Wilmington, Calif.

Cole, Francis Melvin, head, engine department, Curtiss-Wright Technical Institute, Glendale, Calif.

Southern California Section

Dannan, John H., designer, hydraulic equipment, Consolidated Aircraft Corp., San Diego, Calif.

Harlow, Robert J., field service manager, Lockheed Aircraft Corp., Burbank, Calif.

Potter, Charles A., aviation repair, The Texas Co., Los Angeles.

Prussel, Otis G., salesman, industrial division, The Pennzoil Co., Los Angeles.

Sanders, Elmore J., engineer, lubricating oil department, Gilmore Oil Co., Los Angeles.

Thompson, Arthur Jesse, junior tool designer, Vega Airplane Co., Division of Lockheed Aircraft Corp., Burbank, Calif.

Wayman, Robert William, hydraulic design engineer, Byron Jackson Centrifugal Pump Co., Los Angeles.

Southern New England Section

Cooper, Kenneth Clark, research engineer, Pratt & Whitney Aircraft, Division United Aircraft Corp., East Hartford, Conn.

Montgomery, Charles D., service representative, Pratt & Whitney Aircraft, Division United Aircraft Corp., East Hartford, Conn.

Oppe, Howard Charles, assistant secretary, The G & O Manufacturing Co., New Haven, Conn.

Washington Section

Dorsey, William E., Jr., British Air Commission, Washington, D. C.

Hughes, H. Herbert, economist, Automobile Manufacturers Association, Washington, D. C.

Monty, Marshall, spare parts expert, War Department, Motor Transport Division, Washington, D. C.

Outside of Section Territory

Grauman, John A., Capt., Quartermaster Corps, U. S. Army, Fourth Corps Area Motor Transport School, Fort McPherson, Atlanta, Ga.

Jacobson, Alonzo E., president, H. K. Stahl Co., St. Paul, Minn.

McCracken, S. S., service lecturer, Hastings Mfg. Co., Dallas, Texas.

McInerney, James Martin, production manager, McInerney Spring & Wire Co., Grand Rapids, Mich.

Shoemake, Isaac W., M/Sgt., chief instructor, U. S. Army, Schofield Barracks, T. H.

Foreign

Rangi, Toshiro, chief of engineering laboratory, Rangi Spring Works, Inc., Tokyo, Japan.

Steeds, William, senior lecturer, The Military College of Science, Woolwich, England.

Stokes, Donald Gresham, Major, officer in charge of workshops, 61st Divisional Workshop, R. A. O. C., Home Forces, England.

Enter these doors and share in the results of B-G-R research and experience. You'll like the advisory service which has saved others grief, time and experimental expense in getting the proper spring. When you need wire forms or small stampings, have them made the B-G-R way, too. Two plants insure punctual shipments in large amounts or for emergency small lots. Send inquiries to either plant.

SPRINGS • SMALL STAMPINGS • WIRE FORMS

BARNES-GIBSON-RAYMOND

DETROIT PLANT DETROIT, MICHIGAN ← DIVISION OF ASSOCIATED SPRING CORP. → TWO PLANTS → COOK PLANT ANN ARBOR, MICHIGAN